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entering less readily than the nitrate or the chloride. It is of great interest that a considerable sojourn in a hypotonic solution lowered the permeability of the cell to the salt and apparently to the water. FITTING says that this is not a toxic effect. The method shows no evidence that the salts of metals of alkaline earths (Mg, Ca, Ba, and Sr) enter the cells, so equilibrium between the inside and outside need not be reached even in a solution of an essential salt. One wonders whether the permeability in a plasmolytic concentration throws much light on permeability in natural conditions.—WILLIAM CROCKER.

Morphology of Peranema.—DAVIE¹⁹ has investigated the development of the sorus, sporangium, and gametophyte of this Indian fern. The study was suggested by the possible intermediate character of the genus between Cyatheaceae and Polypodiaceae. The receptacle is of the Gradatae type, but the mature sorus is a mixed one. The sporangium also in its early segmentation sometimes follows the type of one family, and sometimes that of the other family. In comparing the features of the genus, the conclusion is reached that an intermediate series consisting of *Woodsia*, *Diacalpe*, and *Peranema* is probable, *Woodsia* coming nearest Cyatheaceae, and *Peranema* nearest Polypodiaceae. The mature sorus of *Peranema* is thought to be most related to that of *Nephrodium*, and a phyletic line is traced from the Cyatheaceae to the Aspidieae group of the Polypodiaceae.—J. M. C.

Two new terms.—TRELEASE²⁰ has proposed two new botanical terms to be applied to hitherto nameless morphological conditions. He points out that the old grouping of plants into thallophytes and cormophytes fails to include such plants as mosses, which are not cormophytes because, although "stem-like," they do not develop root and shoot. He proposes, therefore, a grouping of plants into 3 categories: thallophytes, "cormophytasters" (or pseudo-cormophytes), and cormophytes. The second term, "xeniphyte," is proposed for the so-called endosperm of angiosperms, which being neither an α nor a $\alpha\alpha$ generation is a third generation which has been "overlooked." The angiosperms, therefore, in addition to their other peculiar features, are unique in having 3 generations: sporophyte, gametophyte, and xeniphyte.—J. M. C.

Seed germination in Megarrhiza.—HILL²¹ has investigated the peculiar seed germination of several species of this genus, which is also known as *Marah*. The petioles of the cotyledons are "fused together" to form a tube, which

¹⁹ DAVIE, R. C., The development of the sorus and sporangium and the prothallus of *Peranema cycathoides* D. Don. Ann. Botany 30:101-110. pl. 3. figs. 2. 1916.

²⁰ TRELEASE, WILLIAM, Two new terms, cormophytaster and xeniphyte, axiomatically fundamental in botany. Proc. Amer. Phil. Soc. 55:237-242. 1916.

²¹ HILL, A. W., Studies in seed germination. The genus *Marah* (*Megarrhiza*), Cucurbitaceae. Ann. Botany 30:215-222. pl. 5. figs. 2. 1916.

grows out of the seed carrying the plumule and hypocotyl with it. The length of the tube varies in different species, and in *M. horridus* the elongated tube bears "absorbent hairs." In emerging from the tube the hypocotyl breaks through at the base, and later the plumule pierces the side of the tube. Eventually a hypocotyledonary tuber is formed, which may become very large. In *M. horridus* the interesting discovery was made that in connection with the growth of this tuber the cotyledonary tube splits into 6 separate parts, each of which contains a vascular strand.—J. M. C.

An automatic transpiration scale.—The extensive work of BRIGGS and SHANTZ²² upon the water relations of plants in arid and semi-arid regions, and more particularly their water requirement measurements, has necessitated the construction and use of an automatic scale of 200 kg. capacity, sensitive to 5 gm., in order to measure the transpiration of plants freely exposed to wind and weather. Such a scale is described in a recent publication.²³ In it steel balls are used as weights, and continuous records for periods of several weeks are obtained. The article also contains a review of other forms of transpiration balances, both of the step-by-step type, which includes the scale here described, and of the continuous record type.—GEO. D. FULLER.

Field rot of potato tubers.—PRATT²⁴ points out some interesting facts that he discovered in his studies of the potato rot situation in Idaho. "Stem end rot," "field rot," or "black rot" of potatoes of the round type, such as Rurals and Pearls, and jelly end rot of tubers of the Burbank group are induced by *Fusarium radicicola*. The organism is active at temperatures above 50° C. and can therefore be controlled in storage. Field control of the black rot situation is difficult. Seed pieces afflicted with black rot bring about infection of the following potato crop, and, interestingly enough, virgin soils produce heavier infection than lands that have been put to crops.—G. K. K. LINK.

Recent work in embryology.—SOUÈGES,²⁵ in continuing his embryological studies, has published an account of the Cruciferae, which traverses the classic work of HANSTEIN and FAMINTZIN. The figures are chiefly those of *Lepidium sativum*, although other species of *Lepidium* (*L. campestre* and *L. Draba*) and *Cochlearia officinalis* are included.

²² BOT. GAZ. 56:514-515. 1913.

²³ BRIGGS, L. J., and SHANTZ, H. L., An automatic transpiration scale of large capacity for use with freely exposed plants. Jour. Agric. Research 5:117-132. pls. 9-11. figs. 18. 1915.

²⁴ PRATT, O. A., A western field rot of the Irish potato tuber caused by *Fusarium radicicola*. Jour. Agric. Research, Dept. Agric. 6:297-309. pls. 34-37. 1916.

²⁵ SOUÈGES, M. R., Développement de l'embryon chez les Crucifères. Ann. Sci. Nat. Bot. 19:311-339. pls. 11-14. figs. 76. 1914.